THE ATO

Los Alamos Scientific Laboratory

Volume 6 Number 11
November 1969

THE ATOM

Published monthly by the University of California, Los Alamos Scientific Laboratory, Office of Public Relations, P. O. Box 1663, Los Alamos, New Mexico 87544. Second Class Postage Paid at Los Alamos.

CONTENTS:

Editor: Kenneth J. Johnson

Photography: Bill Jack Rodgers and Bill Regan

Office: D-413 Administration Building. Telephone: 7-6102. Printed by The University of New Mexico Printing Plant, Albuquerque.

Los Alamos Scientific Laboratory, an equal opportunity employer, is operated by the University of California for the United States Atomic Energy Commission.

COVER:

Dust, caused by ground collapse at ground zero of the Physics-8 underground nuclear test this summer, clears to reveal a surface crater and a large tower at a safe distance from the crater's edge. The 100-foot structure, in which there were several experiments, was moved by rail after detonation and before cratering occurred, a first for large towers. The story of this feat begins on page one.

The Physics 8 tower is safe about 125 feet from the crater's edge as bulldozers carve an access road. Ground zero is indicated by pipe at center. A sled on the second story of the tower was pulled away from ground zero on its [illegible]

Physics towers have always been "almost" expendable. Now LASL scientists talk about . . .

The Big One That Got Away

By Ken Johnson

Little more than a minute had passed since the underground detonation of a nuclear device this summer at the Nevada Test Site when a tower on wheels, as tall as a 10-story building, began moving away from ground zero. Twenty-three minutes after the explosive was fired, ground zero collapsed to form a crater estimated to be 175 feet in radius and 50 feet deep.

When the ground collapsed, the tower was safe about 225 feet from the crater's edge.

continued on next page

"No one has ever retrieved a tower of this size in the history of our underground nuclear testing," said Richard Reitman, associate J-6 group leader at the Los Alamos Scientific Laboratory.

The achievement, he said, "certainly means a savings in terms of money, but it's also a savings in time, and a convenience." Towers and the equipment mounted in them have always been considered to be almost expendable. "Almost," because after falling into the crater, operations are undertaken to salvage as much of the structure and its equipment as possible for use in subsequent experiments. But no salvage operations were necessary after Physics 8, as the recent experiment at Yucca Flat was known; a complete tower and all of its contents had been saved for use in a future event.

As a result, some experimenters feel that more equipment can be mounted in towers in the future even though there is still some risk involved, should cratering occur before the tower has had time to move to a safe location. But, they feel the risk-factor is reasonable enough that more elaborate experiments should be conducted. Physics-8 experiments were conducted by J-11, J-12, J-14, J-16, P-3, and W-8.

The fact that more data was collected from the Physics-8 event than from any other in LASL's history of underground nuclear testing has been partially attributed to the new tower concept. "There were experiments we wouldn't have done if we had known we were going to lose our equipment," said Ben Diven, assistant P-division leader. "A tower is expensive, but it may not be any more so than the stuff that's in it. If you know you're going to throw away a tower, you're going to be cautious about the equipment you throw away with it. We couldn't afford to leave it because we don't have that kind of a budget. We have to use this equipment over and over. Now, with this moveable tower, we hope to do some more-elaborate experiments."

Preparations for Physics 8 began about nine months before the shot date. At Yucca Flat where the event took place, emplacement of line-of-sight pipes and other operations at the test hole were done simultaneously with the fabrication of the tower and installment of equipment at a location nearby.

Except for outriggers fitted to the bottom of the tower, it looked much the same as any previously used. The outriggers extended to carriages which were emplaced at each corner of the square tower. Each carriage had four wheels which moved on rails. In all there were four parallel rails—two tracks—which ran from ground zero to a point 400 feet away.

When operations at the test-hole were completed, the tower was "rolled" over it and tied down at each corner so the shockwave from the explosion wouldn't knock the carriage wheels off the tracks.

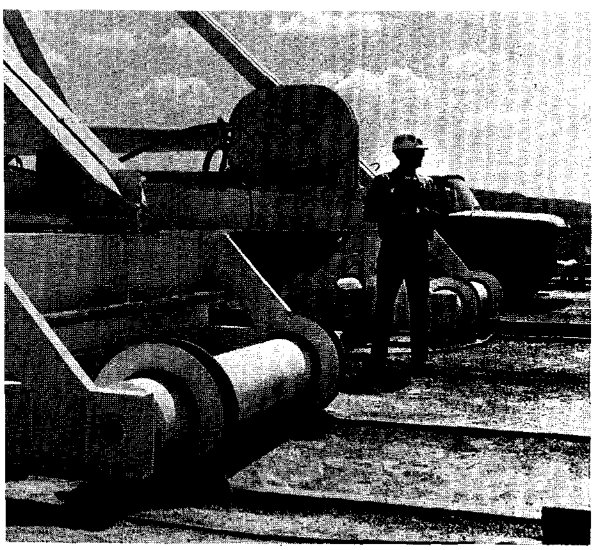
A tie-down consisted of three steel rods, each two inches in diameter, which ran from the tower to a metal plate where they were secured by a pin six inches in diameter. The other end of the plate was connected, by an identical pin to a metal slab anchored in concrete in the ground. Only when the pins were removed could the tower be moved from its position over the hole to a safe point outside the anticipated crater area.

This was done by fitting an explosive charge to each one. When fired, the charges would blow the pins out of the plates and release the tower.

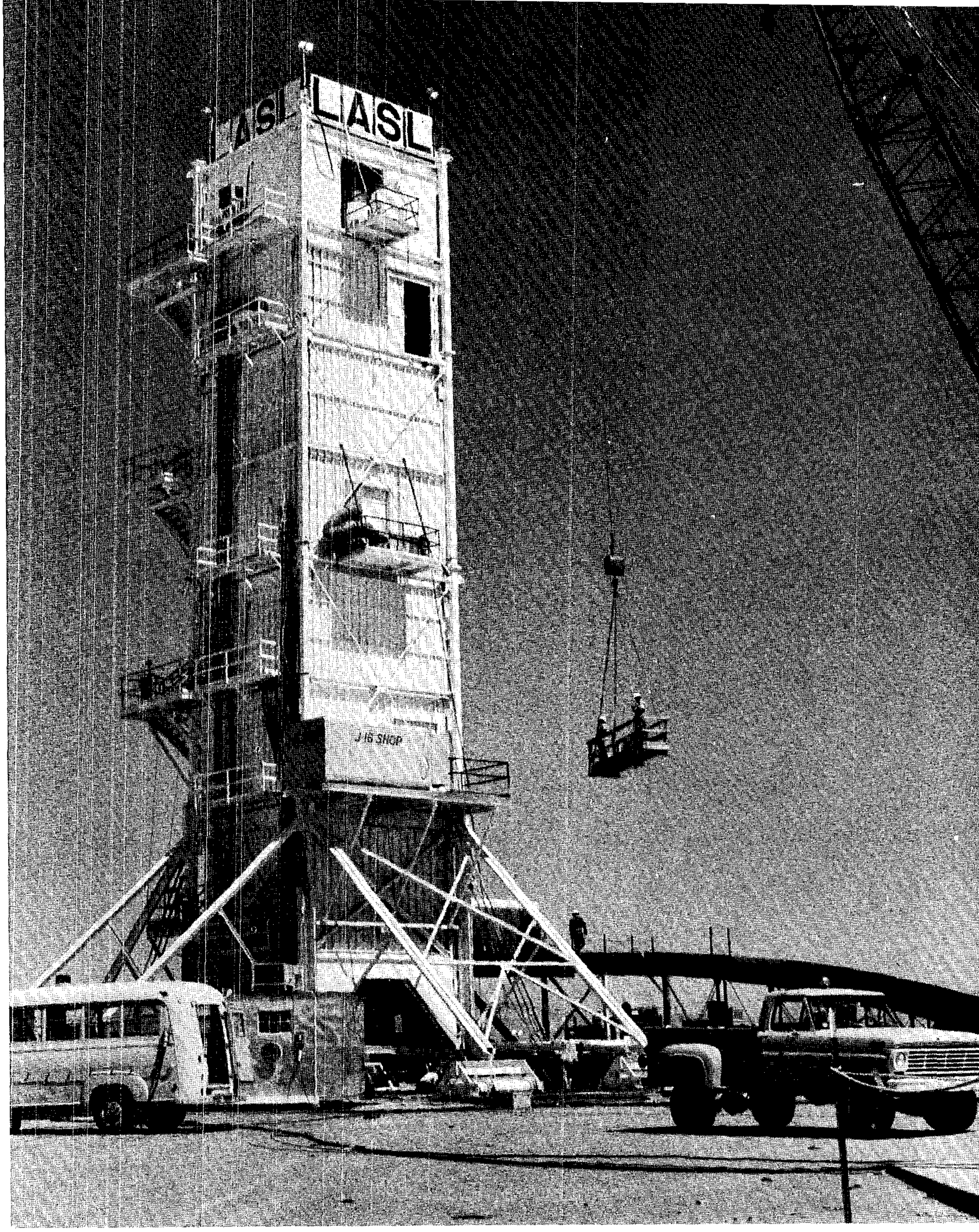
One of the problems anticipated in moving the tower away from ground zero after detonation was that the weight of the more than 150 cables, averaging half an inch in diameter, that ran from the tower to recording stations 900 to 1,000 feet from ground zero, would inhibit the free movement of the structure.

But Tony Miera, a J-6 member stationed in Nevada who was in charge of all site construction for the event, came up with an in-

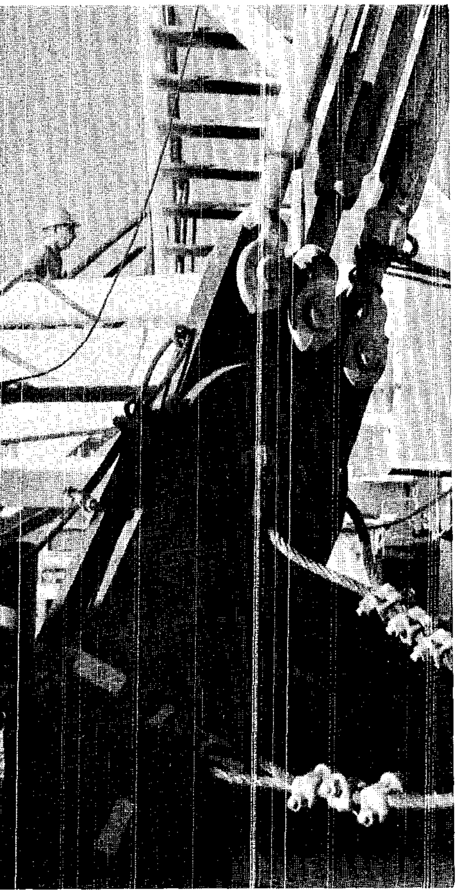
Tony Miera, a member of J-6 at NTS, stands between two of the four-wheeled carriages on which the Physics-8 tower moved.



Workmen perform final clean-up of tower before shot-time.



Only when charges were exploded to remove tie-down pins could the tower be moved away from ground zero.



genious method of cutting the cables at the base of the tower after detonation. He devised block-and-tackle arrangements which pulled blades down and cut the cables when the tower was set in motion. Three of these arrangements were used. On each one, a nylon rope was "tied" to the blade which was fashioned from a steel beam. Then, the rope was threaded through a series of pulleys and secured to the tower. When the tower moved, it pulled the heavy blades down on the cables, cutting them.

The tower itself was pulled away from ground zero. The power unit, consisting of twin 450-horsepower diesel engines remotely operated from the control room, was used in previous shots for dragging pigs out of test holes and away from ground zero before cratering occurred.

Sleds and pigs are used in most physics experiments conducted in

continued on next page

Loading the charges that, when exploded, removed the tie-down pins is Lester Hackenberry, J-8, at right, who is aided by Miera. Watching the operation are Dick Reitman, associate J-6 group leader, Bob Peterson, J-8 member at NTS, and Ray Escobedo, J-6 member at NTS (standing).

connection with underground nuclear tests. In general they contain experiments that must not be allowed to fall into the crater when the ground collapses.

In the Physics-8 event there was a pig in the line-of-sight pipe below the surface of the ground and a sled over the pipe at ground level. After detonation this sled and another one on the second story were to be pulled away from the tower first. When the sleds were clear of the test hole, the pig would be winched out of the pipe and into the tower.

Everything went as planned although test participants were apprehensive about whether or not the tower could be moved to a safe location before cratering occurred. Cratering is caused by the roof caving into the underground cavity formed by the explosion of a nuclear device. The ground isn't compacted as well in this area of Yucca Flat as it is in others. Its texture is more granular so that cratering can occur more rapidly than in areas where the soil sticks together better.

Estimates were that cratering would occur five to 10 minutes after detonation, although it has been known to happen as soon as two and a half minutes after detonation in this area.

After the Physics-8 device was exploded it took only a few seconds for the ground-level sled to clear the top of the line-of-sight pipe. A winch began pulling the pig out of the test hole and, soon thereafter, Test Director Bob Newman, J-DO, gave the order to blow the explosive bolts that would release the tower from its tie-downs.

Since detonation, perhaps a minute and a half had passed. Newman issued the order to move the tower and Lynn Staker, a member of J-6 in Nevada, put the power unit into action that would pull it away from ground zero. Control room operators watched the tower move on their television monitors and, four minutes after detonation, heralded its success when the structure cleared the critical zone in which cratering was anticipated.

A 100-foot tower (105 feet including the four-wheeled carriages) weighing 200 tons had been retrieved from ground zero before it cratered. "It was a pretty good feeling to watch it come off and know everything worked," Reitman said.

This tower, as all others used in LASL physics experiments have been since underground nuclear testing began, was made up of 25-foot sections, or modules, stacked one on top of another. These modules are left over from the days of atmospheric testing when several of them were stacked to form a tower several hundred feet high and a device was emplaced at the top.

With the advent of underground testing, towers took on new importance. They were positioned over test holes, and physics or weapons experiments, largely dependent on radiations released by the explosion of a nuclear device far below the surface of the ground, were mounted in them.

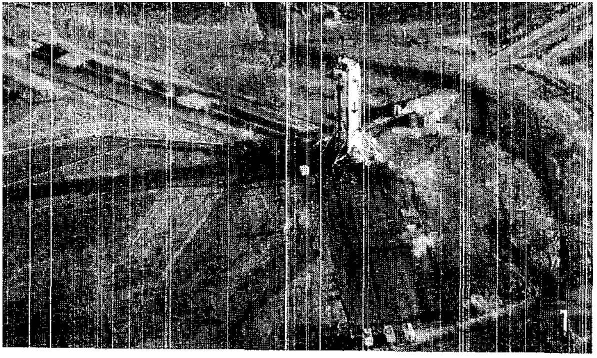
Through the years experiments have grown in number and, as a consequence, the height of the towers has grown too. The tower for Persimmon, an event conducted two years ago, was 50-feet high. Pommard, about a year later, required one 75 feet in height.

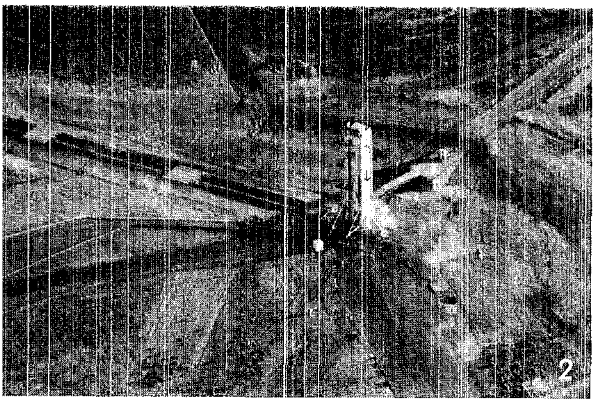
The Pommard tower, however, was a problem. It was too big to be moved over the test hole by crane, as was the custom. Therefore, the Pommard structure was mounted on wheels and tracks were laid to ground zero. The tower was

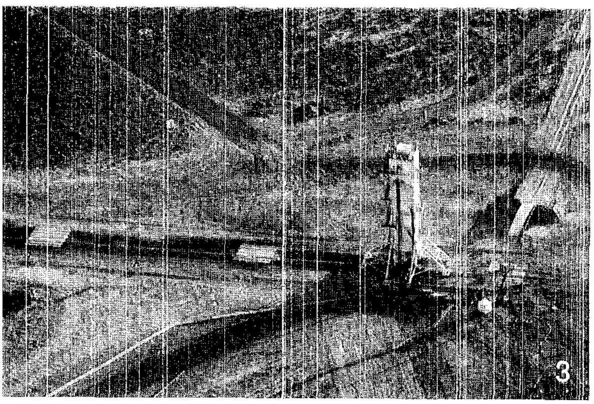
continued on page 7

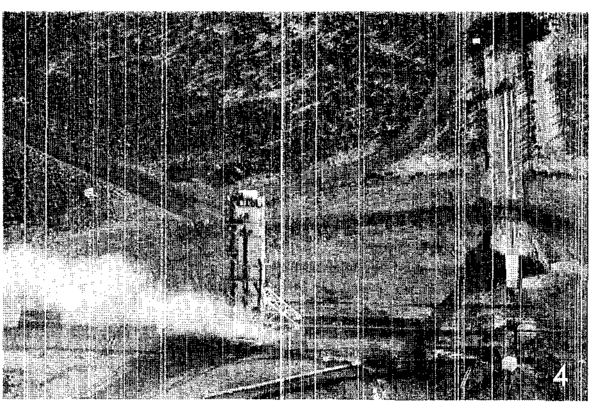
Lynn Staker, J-6 member at NTS, controlled the power unit that pulled the Physics-8 tower away from ground zero before cratering occurred.

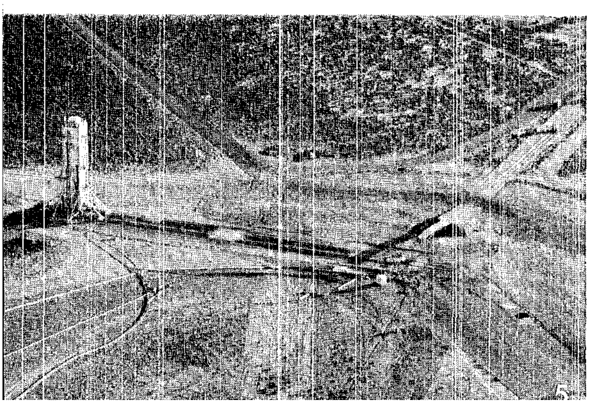
Heavy blades cut the many cables at the base of the tower. The blades were pulled down with the use of block and tackle arrangements which were put into operation by movement of the tower. The method was devised by Miera.

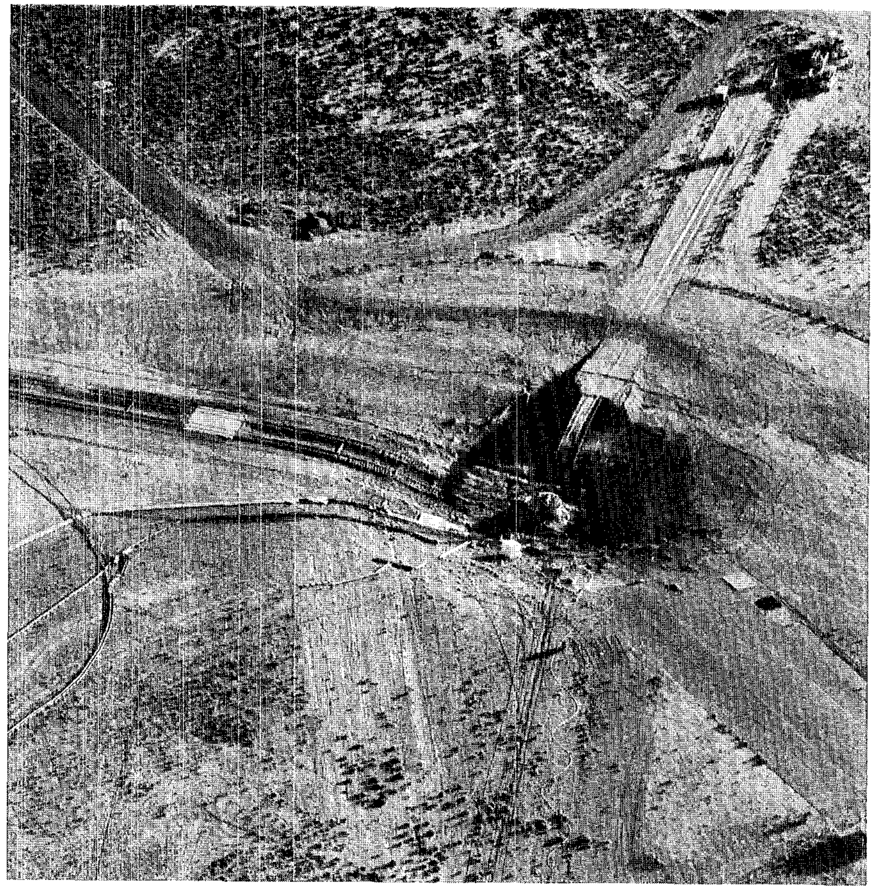












Photographs at left show the sequence of events immediately following the underground detonation. (1) Dust caused by the shockwave rises around ground zero. (2) Tie-down charges are fired to release the tower. Sleds being pulled away from ground zero can be seen at upper and lower right of tower. (3) The tower begins to move. (4) Smoke from the power units blows toward the tower. (5) The 100-foot structure reaches the end of the tracks, a safe distance from the anticipated crater area. Above, cratering begins and, a second later, at right, ground collapse is complete.

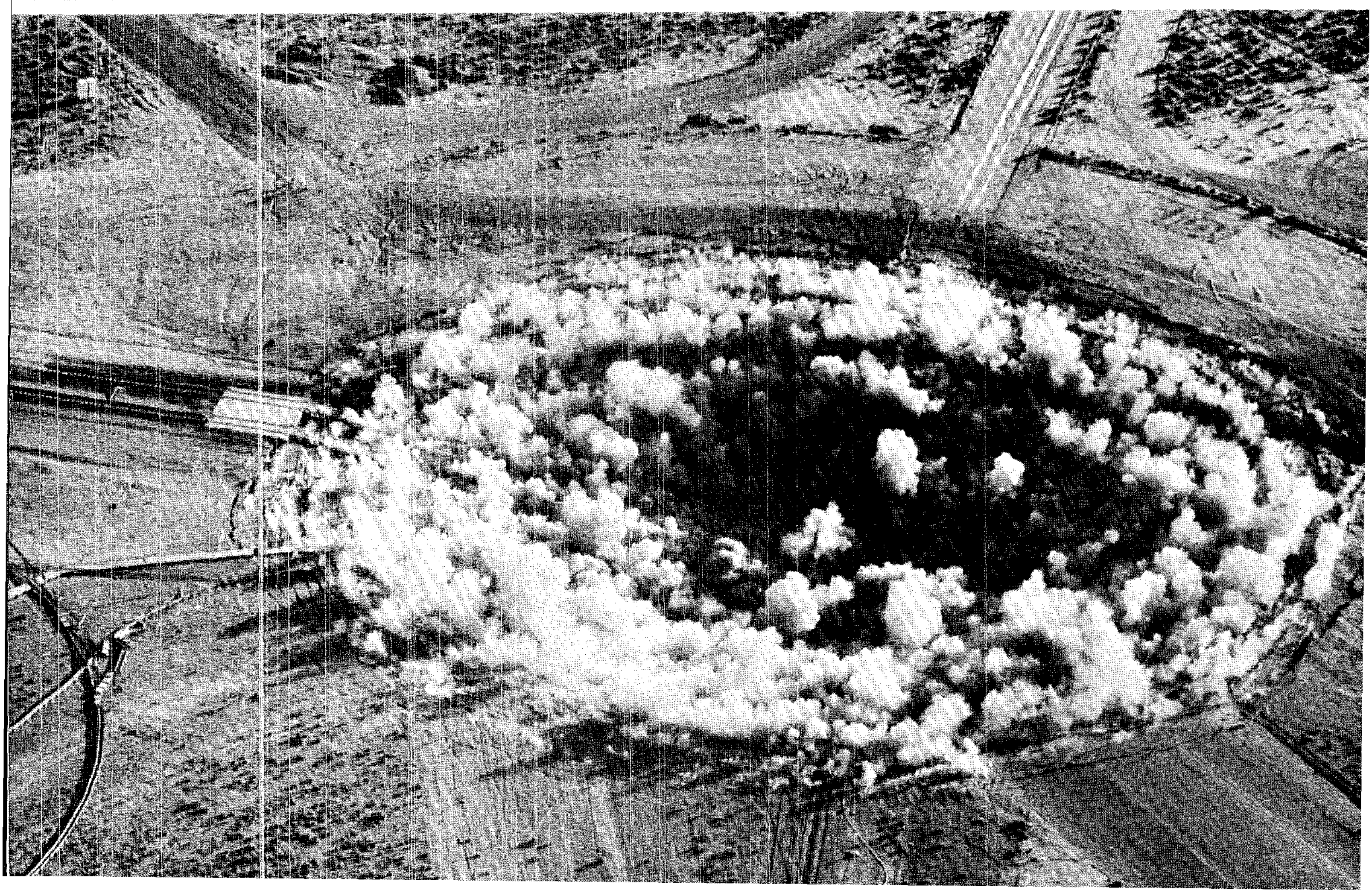
Jose A. Lopez, radiological safety, poses for PUB-1 Photographer Bill Jack Rodgers to show relative size of ground cracks around the crater's edge.

"rolled" into position over the test hole and then jacked up. Its carriages were removed; the tower was lowered to the ground and the rails were taken up. From this point on, there was nothing else novel about the Pommard tower.

But, when preparations began for the Physics-8 event, J-6 was asked to find a way to retrieve the tower. "We said, 'we'll try,'" Reitman noted. Subsequently, members of J-6 studied fast action movies, information available on shockwaves, size of craters and other pertinent data from previous shots. From this study they conceived the method by which the Physics-8 tower and its equipment could be saved.

Working with the J-6 staff at the Nevada Test Site, Holmes and Narver, Inc., designed the carriages on which the structure would be moved. J-6 members, such as Miera and Staker, made necessary modifications in the design, and Reynolds Electrical and Engineering Co., Inc., (REECo) was responsible for fabrication. Other LASL groups involved in preparing the tower for Physics 8 were GMX-6 which provided the explosives used to blow the pins from the tie-down plate; J-8 which was responsible for loading the charges and capping the pins; J-7, whose members designed and installed hardware, with respect to experiments that were conducted, including line-of-sight pipes, equipment racks, vacuum systems and some experiments.

"It was the first time we didn't have to pick up our vacuum pumps at the bottom of a crater," said Ron Cosimi, J-7.



After the Sundts

Photos and Story by Bill Regan

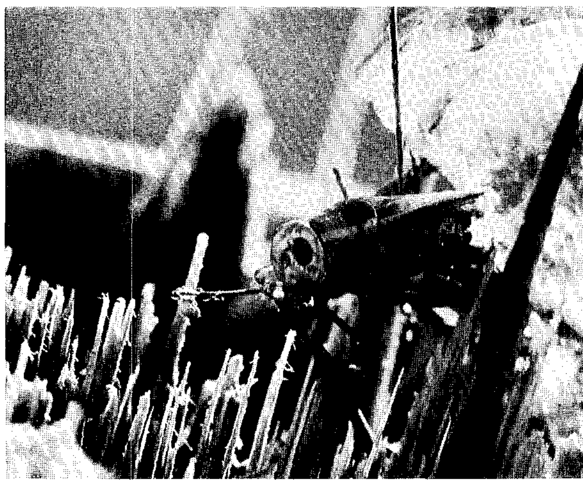
Barely a stone's throw from busy thoroughfares one can see, if only the gaze is focused closer than normal wont, a tiny world of patterns and essence of nature's ever-present pressure to overwhelm man's works. Man paves earth with his streets and covers fields with dwellings and yet works only a temporary change.

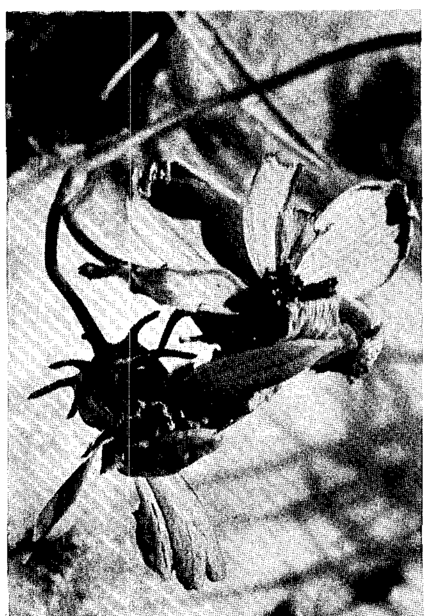
A few seasons' relaxation from man's daily presence and maintenance, and the tiny things of nature make strong return. Streets crack and seeds, long dormant, swell to life through the openings and abundantly seed again season by season. First come the annual weeds (or so man calls them) and wildling flowers. Then appear the tree seedlings and larger shrubs whose expanding root systems push paving aside and, in cooperation with winter's chilling contraction and warming spring's expansion, work nature's change. Before hurrying man realizes, wilderness or wildness returns.

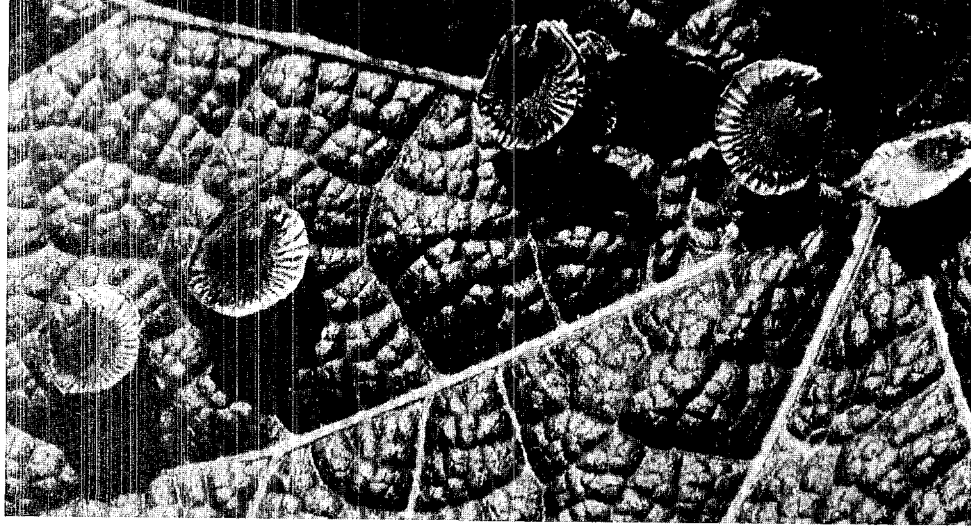
Such a place exists along Los Alamos' Trinity Drive in the area once occupied by Sundt apartments from World War II days until mid-1965. Areas once bare from the razing of the Sundts were masked this season by spectacular wildflower displays nurtured by early summer's heavy rains. An even heavier crop of seeds for next season has followed as the last of the flowers withered and died from October's early snow.

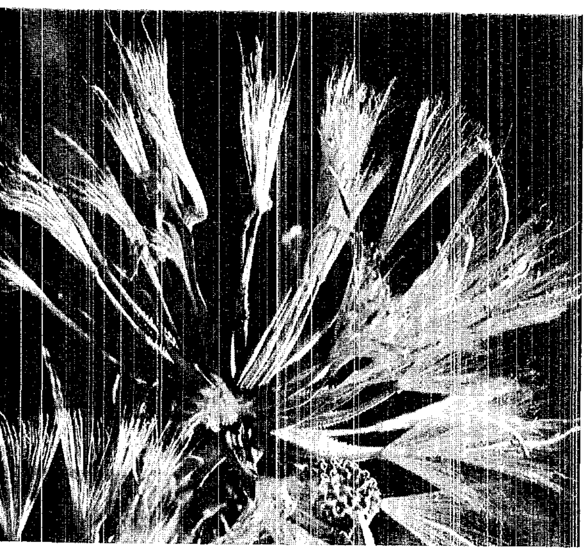
Masses of larger wildflowers can be seen from cars hurrying to and from work, but only to the leisurely stroller, who stops to look as close as his nose, does nature reveal her most intriguing patterns. And this revelation only comes when the light is right. On a recent stroll along the abandoned street, once known as Gold, there was time and the light was right.

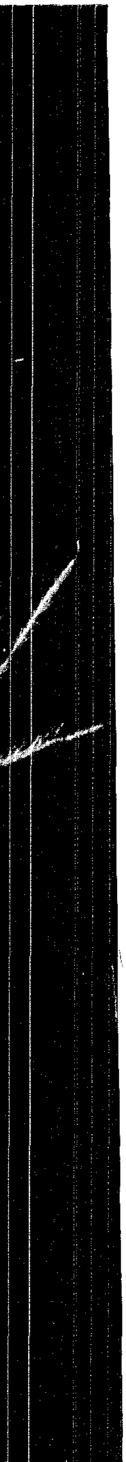
photos continued on next page

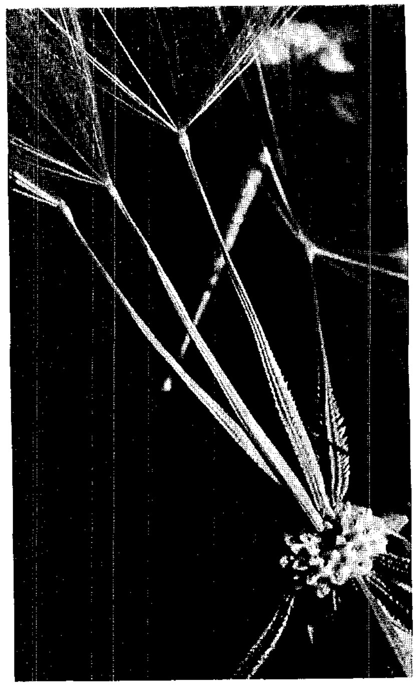


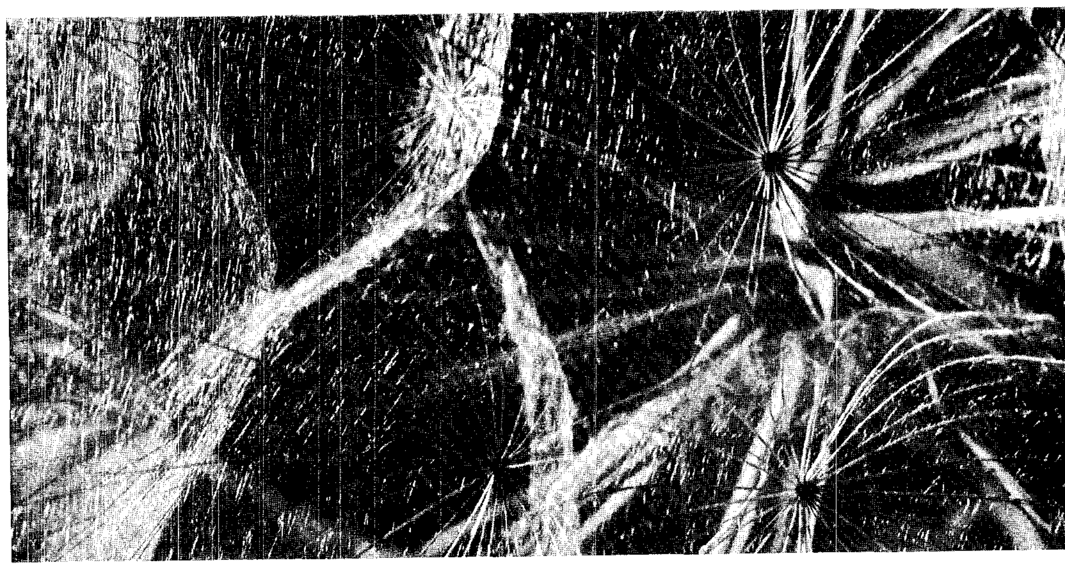













Health Division Leader

Dr. Thomas Shipman Dies

Dr. Thomas L. Shipman, 64, Health division leader at the Los Alamos Scientific Laboratory, died of an apparent heart attack at his home in Pojoaque Sept. 29.

Funeral services, attended by his immediate family only, were conducted at the Shipman home.

Dr. Shipman is survived by his wife, Frances, four sons—Thomas L., Jr., Las Vegas, Nev., Ripley and Nathaniel, both of Santa Fe, and Theodore, Denver, Colo., and two daughters—Sally (Mrs. S. T.) Early, Kalamazoo, Mich., and Ann (Mrs. L. N.) Johnson, Denver, Colo.

He joined the Laboratory as a staff member in H-DO in November of 1948. In January of 1949, he was appointed division leader.

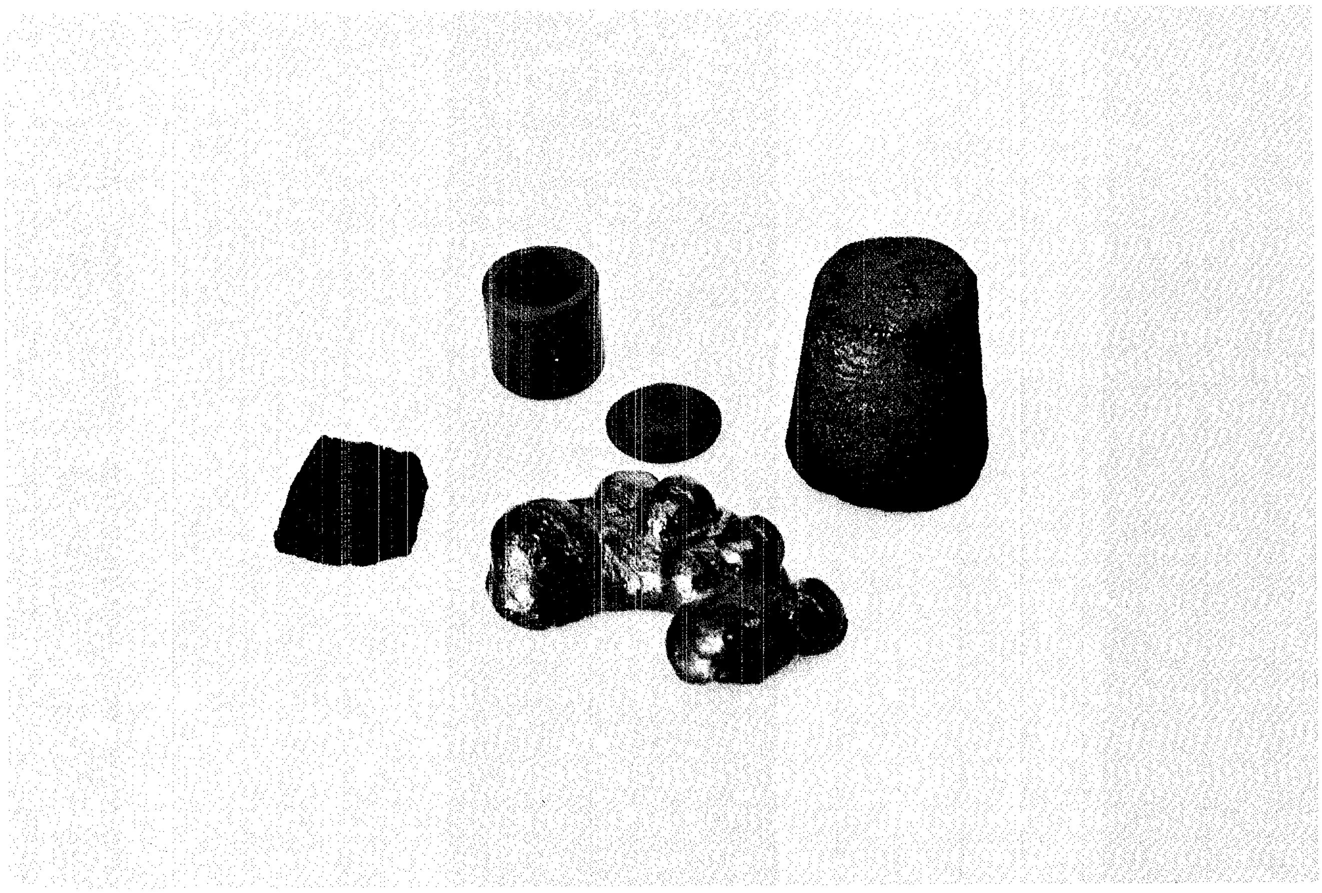
He was born in Andover, Mass., June 5, 1905, and was graduated from Phillips Andover Academy in 1923. He received the Ph.B. degree from Yale in 1928, and the M.D. degree from Harvard Medical School in 1932.

From 1932 until 1936 he was an intern in the Boston Lying-In Hospital and Phillips House of the Massachusetts General Hospital.

In 1936, Dr. Shipman joined the General Electric Company in Lynn, Mass. During that company's peak employment in the war years he supervised the health and medical care of 34,000 employees.

He was a Fellow of the Industrial Medical Association and of the American Academy of Occupational Medicine. He was a member of the American Industrial Hygiene Association, New Mexico Industrial Hygiene Association, Health Physics Society, New Mexico Technical Radiation Advisory Council, the Board of Directors of the National Committee for Radiation Protection and Measurements, and was certified by the Occupational Medicine Branch of the American Board of Preventive Medicine, and the American Board of Industrial Hygiene.

As leader of the Laboratory's Health division, Dr. Shipman supervised a wide variety of related Laboratory functions at Los Alamos and in Nevada, including health physics, industrial medicine, safety, biomedical research, industrial hygiene, radiological physics, industrial waste disposal, and field studies at the Nevada Test Site.



Vitreous Carbon

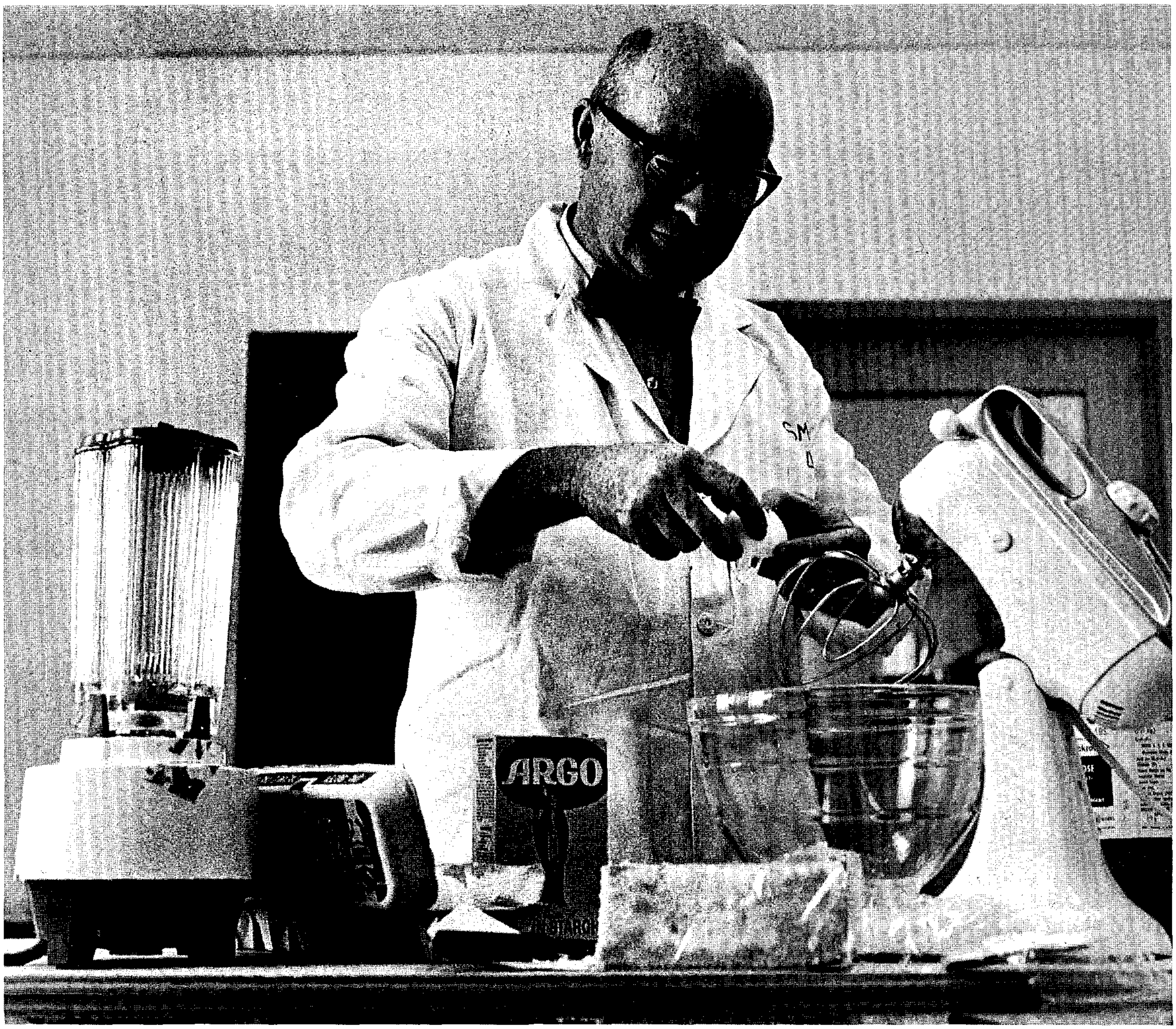
What a little charred sugar, egg white and cake mix can do

Until his wife complained about the mess and smell in her kitchen, Earl Fullman was making vitreous carbon during his evenings at home. It was the kind of homework that was easy to do. All he needed was some of her eggs, cake mix, sugar, and a few other things that most housewives have in their cupboards and refrigerators.

Vitreous (glassy) carbon is the black, lightweight residue that housewives clean out of their ovens after making pastries. Obviously, a housewife doesn't make it intentionally because it just means more work for her. But it's a boon to Fullman.

This substance makes good thermal insulation, crucibles and other articles capable of withstanding temperatures in excess of 3,000 degrees centigrade. Working with materials at high temperatures is one facet of Fullman's occupation. A J-16 physical chemist, his pri-

continued on next page



Earl Fullman has some unusual equipment in his laboratories, such as a blender and a mixer, but it is less expensive than specially made laboratory equipment. Here Fullman breaks an egg. The egg white can be charred to vitreous carbon.

mary job is growing crystals for scintillators, semi-conductors and optics, needed at Los Alamos Scientific Laboratory, and was the cause of his invasion of the family kitchen.

"We were working on a big ruby and came up with iron contamination from graphite that was being used as a radiant heat source," he said. "We needed something else. Our investigation of this contamination led us to a detailed study of carbon. Vitreous carbon is more inert than graphite and in purity is way above it."

Fullman experimented with vitreous carbon for many months at the Laboratory. Then, at home, he charred some sugar in his wife's oven. He charred some egg whites, cake mixes and even bread. "The cake-type chars were specifically aimed at thermo-insulators simply because they offered a simple mode of controlling the structure's cell size. Bread works pretty well at low temperatures but it has too much sodium in it for high temperature work," he said.

He worked in his wife's kitchen for about a year. "She finally objected to charring these things in her oven so I started doing it here," Fullman said, referring to his work area at the Laboratory.

Fullman's work area consists of six laboratories, a darkroom, an office, and a conference room. This is more space than many sections with more people have to work in. But Fullman, who is assisted by Technician Venancio Martinez and Half-Time Technician Clara Riebe, has experiments going in all six of his laboratories all of the time and is constantly hurrying from one to the other checking experiments and starting new ones. "Last time we were in Las Vegas we saw an act where a guy tried to keep plates spinning on top of several poles. Sometimes I feel like that," he said.

Fullman makes most of his own equipment. Many high-temperature furnaces, for example, of different types and sizes are needed for his work. "We make them at home with loving hands," he said. One is made from a 30-gallon drum. Another, used to grow ionic crystals in an air atmosphere and to dispose of vitreous carbon residues or glassware is made from a garbage can.

In these surroundings Fullman has continued his study of vitreous carbon. "The deeper we become involved the more uses we see for the stuff," he said. "We can now make a furnace using it, not only as a thermal insulator, but as the resistance conductor. It makes a remarkable thermal insulator. We can control it to get whatever pore size we need and we've made it hard enough to scratch glass and even quartz."

In most cases it has also proven to be a better material than graphite for making molds. Fullman was using graphite as a mold to make glass-rod laser optics. The glass adhered to the mold and, during the cooling process, fractured, parts of it still clinging to the mold. For this type of work, Fullman said, puffed or cellular vitreous carbon works better because it will pull apart when the glass contracts.

Felt has been thermally decomposed to make insulators, crucibles and other types of containers. "We simply put it in a nitrogen or vacuum atmosphere at 500-1,000 de-

continued on next page

Half-Time Technician Clara Riebe sews a strip of felt around a circular piece of the same material to form a container. It was later charred to vitreous carbon.

Fullman watches as Technician Venancio Martinez disposes of some vitreous carbon residues in a furnace made from a garbage can.

grees centigrade for an evening and we're done with it. It's good for temperatures up to 3,000 degrees in inert atmospheres.

"One of the problems in making vitreous carbon from organic compounds is that if you heat the material too fast, the gases and water in it can't escape fast enough and it'll explode on you. It takes about three weeks of slow heating to make a small non-porous crucible.

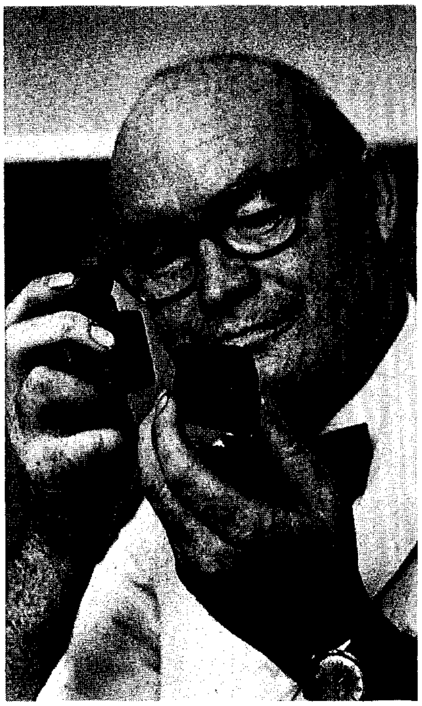
"We consume every crucible we make. I wish we could make more. Some weeks we could use a dozen a day. We are getting out of the cake, sugar and egg white business because other things will work as well. We've learned to make foam phenolic (a mixture of phenol and formaldehyde) which chars and works well. It has better strength and it's less dangerous to work with."

Proteins and amines in particular, Fullman said, emit hydrocyanic acid while undergoing thermal decomposition. It is a deadly gas and, for this reason, materials that emit it must be worked with under ventilation hoods. It is very soluble in water, he said, so it can be taken out by "water-bubbling," and in liquid nitrogen traps.

In addition to being less dangerous, phenolic is the easiest resin to use, Fullman said. "It gives the best yield of vitreous carbon—if only it wouldn't fracture and blow up if heated too fast. The Japanese are using a dipping system to get around it. If you were to crosscut some of the Japanese material it would look like an onion. It's built up in layers."

Fullman said it is often easier to make vitreous carbon containers from a phenolic foam than a solid because in charring, gases can escape through pores in the foam. The foam is then given a solid non-porous surface coating. It takes much longer for gases to migrate out of a solid.

He makes phenolic resins by boiling and condensing mixtures of phenol and formaldehyde. They can then be poured into a mold



It takes about three weeks of slow heating to make a non-porous crucible such as the one Fullman has in his right hand. In his left hand, he holds a charred piece of angelfood cake.

and catalyzed to form a solid material. After it sets up, the resin can be thermally decomposed to form vitreous carbon. "Shrinkage," he said, "is about 50 per cent. Tolerance of items made at present is determined by trial and error."

In addition to being a good insulating material, Fullman said, vitreous carbon is also a good electrical conductor. "We can build resistance into a vitreous resistance heater and use a 110- or 220-volt power source. For a graphite element we have to use low voltage and a lot of current. It makes a cumbersome transformer system."

Fullman said industry produces similar materials for high temperature work, including vitreous and pyrolytic carbon. "Pyrolytic has properties that are slightly different than vitreous. It is a good dielectric in one plane and a good conductor in another. Vitreous is amorphous, conducts equally in all directions and is non-inductive to a radio-frequency field in the 10,000 cycle range. Graphite is very inductive. That's why it is used in induction furnaces.

"Various refractory carbides can be readily produced by mixing the appropriate amounts of metal or metal oxide with the organic resins. By adjusting the metal-carbon ratio, it is possible to obtain a container of metal carbide suspended in a vitreous carbon matrix or a reasonably pure carbide container. White silicon carbide crucibles composed of clear silicon carbide crystals have been made in this manner.

"The extreme hardness of such things as tungsten carbide, boron carbide or silicon carbide makes it difficult to fashion these materials; however, all machining and shaping can be performed while the materials are suspended in the plastic matrix. After firing, nothing but diamond tools can touch these carbides.

"A similar series of silicides can be made using silicon rubbers and plastics.

"I think we'll see space ships and high temperature reactors insulated and made from vitreous carbon sometime. It has little weight, good strength, and is one of the best thermal insulators going. In the vacuum of space about 3,000 degrees centigrade might be the upper useful temperature limit, although we don't know. Graphite sublimes away at 2,200 degrees in vacuum.

"Carbon goes back a long way. Most texts state that carbon exists in three allotropic forms, i.e. graphite, diamond, and amorphous carbon. I do not believe that graphite or diamond are allotropic forms of carbon, but owe their properties to small amounts of impurities. There is evidence that pyrolytic or vitreous carbon does have a crystalline form; however, neither diamond nor graphite is that form. Diamonds and graphites exist as families of unbalanced carbon-carbide complexes."

Feeding the 500-for-Lunch Bunch

It's noon at the South Mesa Cafeteria, one of three cafeterias at the Los Alamos Scientific Laboratory.

There'll be about 500 for lunch today.

The number isn't drawn from a hat, figured on a slide rule, or produced by a computer. It's taken from daily records that show the number of people that ate in Los Alamos Scientific Laboratory cafeterias the same day last year.

According to Mrs. Virginia Lyon, PER-4 group leader who is in charge of LASL cafeterias, there is a pattern to people's eating habits. By looking at records on any given day a year ago, the num-

continued on next page

A part of the 500-for-lunch bunch goes through the serving line at South Mesa. John Park serves the customers, as Mrs. Leora Mitchell, center, and Mrs. Ruth Hughes get more food for the service line.

ber of persons that can be expected on the same day this year can be very accurately predicted.

Even so, cafeteria employees are prepared to serve an additional 50. "If someone is planning on bringing over a party of more than 50, we would like to know about it in advance," she said.

In all, there are three cafeterias at LASL. They are the South Mesa, S Site and DP Site. Mrs. Lyon is assisted by Mrs. Ellen Morris.

The group leader and her assistant have an office at South Mesa. At the other two cafeterias, worker-managers are charged with accounting for money collected and maintaining a proper inventory of food and equipment. Worker-managers are Junietta Frentzel at S Site and Pilar Serna at DP Site.

The busiest part of the year is during the summer, paralleling peak employment at the Laboratory, due to summer consultants, summer employees and official visitors.

Many of the visitors are from foreign countries. The food is often strange to them, but PER-4 employees are polite and help them as much as possible, going so far as to let them taste something, before ordering, to see if they like it.

The cafeterias are no place for the person who seeks exotic foods. "We try to provide tasty food, the type that a family would eat at home," Mrs. Lyon said.

Everything on the menu is a la carte and on a serve yourself basis as much as possible. The group leader said the average price paid for a meal at South Mesa is $1.07. At S Site, it is a little lower because of the number of employees who carry their lunch and buy only pie from the cafeteria for dessert. At DP Site the average check is about 95 cents.

The meals are carefully planned and varied in such a way that it cannot be said that Tuesday is "chicken day" or that Thursday is "hamburger day." Meals are prepared in different and new ways so that it is a long time before any meal is ever repeated.

"If anyone has a diet problem, we try to be of service to them," Mrs. Lyon noted. "If they will let us know in advance what they need we will fix it, put their name on it, and save it for them."

With advance notice, sack lunches are prepared for persons who are not able to go home or to one of the cafeterias for lunch. Such occasions are generally during official tours and meetings.

Cafeteria employees also cater food for official receptions at the Laboratory. They catered their 100th one in June, honoring the retirement of Harry S. Allen from the Laboratory.

Food left over from a meal is not wasted. Just as mom does at home, leftovers are made into soups or casseroles. To minimize the amount of leftovers, the cooks keep an eye on the people waiting in line. They gauge the amount of hot foods they prepare by the number of people waiting.

The cooks are Dennis and Arthur Montoya, brothers. Arthur is the cook at South Mesa and Dennis at S Site. They have been employed at the cafeterias for more than 10 years.

South Mesa and S Site Cafeterias are open to *anyone, not* just Laboratory or Laboratory-connected personnel. Many people take their families in for lunch; some Los Alamos teachers eat there occasionally as well as a few students. DP Site Cafeteria, however, is located in a restricted area. Only those persons possessing badges with a "2" on them are allowed inside the fence.

South Mesa Cafeteria has a seating capacity for 260 persons in the main dining area. Two meeting rooms, built about a year and a half ago, can accommodate another 60 to 70 persons.

The meeting rooms are in use almost every day. Official Laboratory functions have priority. Mrs. Lyon noted that many non-Laboratory meetings are held in the rooms, but they are scheduled with the understanding that if room is needed for an official function, they will be "bumped."

In addition to preparing the food served at South Mesa, its employees also prepare hot foods for the DP Site Cafeteria. Only those foods which don't require prolonged cooking are prepared at DP Site. Seating capacity there is for 60 persons.

S Site Cafeteria can seat 175 customers at a time. Each Wednesday is "Spanish food day" there only. The meal usually consists of enchiladas or tacos. In addition to preparing regular noon meals and the once-a-week Spanish foods, S Site Cafeteria employees make the pastries—pies, cakes, dinner and sweet rolls, doughnuts—that are served in all three cafeterias.

About 60 dozen sweet rolls and doughnuts are made daily and sold in all of LASL's cafeterias throughout each work-day at five cents apiece. They are sold in quantities that range from only one to several dozen. Many of the groups at the Laboratory have standing orders for rolls and doughnuts, and arrange to have them picked up before morning and afternoon coffee breaks.

continued on next page

Mrs. Virginia Lyon, PER-4 group leader, inspects the South Mesa Cafeteria just before the noon-hour.

PER-4 employees keep the cafeterias spotlessly clean. With pride in their work, Mrs. Lyon keeps an invitation open for anyone to inspect the cafeterias, including the kitchens.

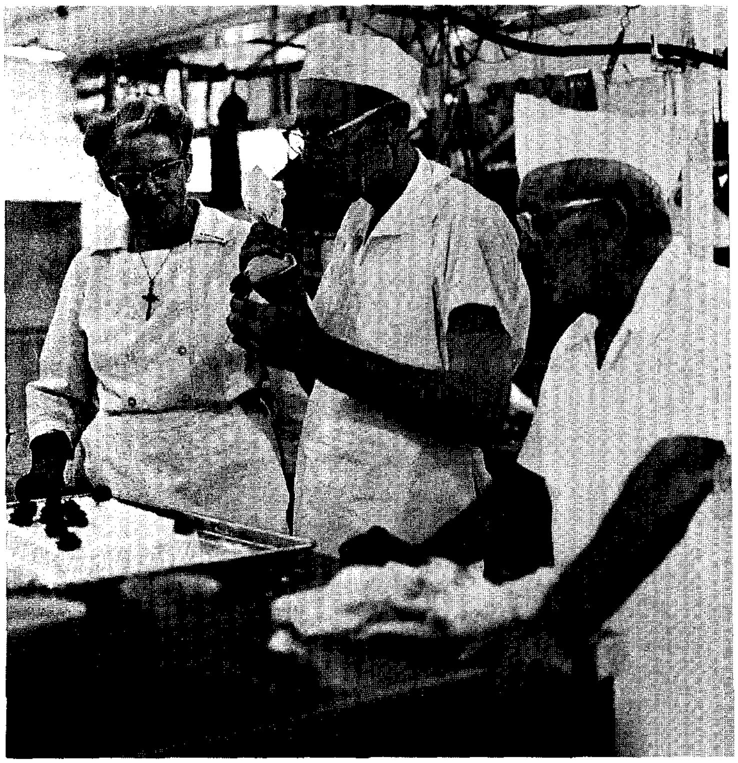
Employees of LASL's food service group have been on the job for an average of about 10 years. Retirement and health problems are generally the reasons for terminating. Some women resign to accompany their husbands who have found employment off the Hill.

"We train our people to do more than one thing," Mrs. Lyon said. "We try to have three or four people who can do every job in the cafeteria so that when someone is on vacation or away because of a family emergency, we can fill in for them.

"Some people who used to work here still live in the area. Sometimes if we call them when we're in a tight spot, they seem happy to help us out for two or three days—Family Days is an example."

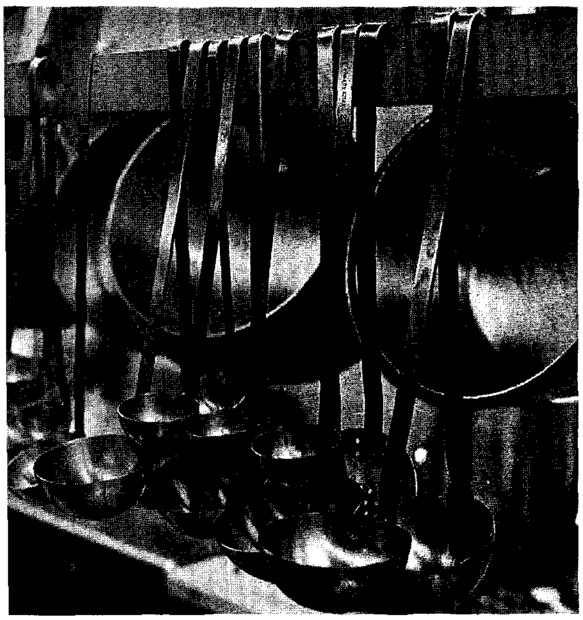
The current staff numbers 17 full-time employees, two part-time and two casuals. There are no grouches among them. "We try to give service," said the group leader. "I insist on our people being polite to customers, and they do a good job of it. They know most of the people who come here to eat, what time they come and where they sit."

The result is contagious. "The people—99.9 per cent of them—are very nice and considerate," Mrs. Lyon said. "We get few complaints. The major one is that they have to stand in line. Of course, with so many people coming in all at once, someone always has to be at the end of the line."



At the S Site Cafeteria the day's pastries are being prepared. At left is Mrs. Junietta Frentzel, worker-manager. At center is Ted Starnes and, at right, Dennis Montoya.

Spotlessly clean ladles and other containers are ready for the noon-hour rush.



Until recently there were two waiting lines. One was the food line and the other was where people payed for their meals after eating. Now the cash drawers have been installed at the end of the food line so that meals are paid for before the customer sits down to eat. At South Mesa, where the traffic is the heaviest, a second cash drawer has been installed so there are no long periods of waiting in the food line.

Only milk and bread are purchased for the cafeterias on a bid basis. Other foods are purchased directly from wholesalers. "It's hard to buy on a bid basis," Mrs. Lyon said, "because we are not in a buyer's market. We have to buy from a company that will deliver in Los Alamos. For this reason there are only certain companies that we can buy from."

Enough meat to last a week is generally delivered to the cafeterias each Monday. Other types of groceries, especially canned goods, are purchased in quantities great enough to last as long

continued on page 22

In the South Mesa Cafeteria kitchen, Cook Arthur Montoya puts pans of stew in the ovens while frying potatoes on the grill.

Mrs. Ellen Morris, left, Mrs. Lena Mae Hobbs and Mrs. Lyon prepare items for an official reception.

as six months. "In some cases, when we can get a good price break on something, we will buy a year's supply," she said.

"Emergency items and most things for official receptions, we buy locally."

Mrs. Lyon, a LASL employee of 13 years, has made the observation that calories are consistent with money. "If you watch your money, you won't eat too many calories," she said.

Another observation she has made concerns nationwide efforts in recent years to discourage people from smoking. Apparently these efforts have been successful at LASL. "Five years ago every ash tray was dirty after a meal. Now half of them are never used."

British Chemist Visits Laboratory

Nick Matwiyoff, seated, discussed a nuclear magnetic resonance experiment with visitor Sir Ronald Nyholm, left, president, British Chemical Society, who recently toured CMF-4 laboratories with Group Leader Eugene Robinson, right, and Robert Penneman, center, alternate group leader. Professor Nyholm, who is also chairman of the chemistry department, University College, London, spoke at a CMF-4 Seminar on "Some Aspects of Modern Inorganic Chemistry."

short subjects

Weapons Division Leader **Harold Agnew** has been appointed to serve on the recently reconstituted Military Aircraft Panel, a unit of the President's Scientific Advisory Committee (PSAC).

The panel was formed about four years ago to advise the President on all matters concerning military aircraft, a function that terminated with a report to the Department of Defense.

Agnew has been a member of the panel for the past three years. He was appointed to serve on the newly reconstituted panel by Lee A. DuBridge, science advisor to the President. One of the purposes of reorganization, DuBridge said, is to maintain continuity between PSAC panels.

"The Atom" received the top award in its category at the Annual International Council of Industrial Editors District Five Evaluation and Awards Contest in Denver last month.

The magazine, published primarily for employees of the Los Alamos Scientific Laboratory, received the Award of Excellence in the category for internal magazines whose circulations are between 5,000 and 15,000. Issues of "The Atom" judged in the contest were December of 1968, and July and August of 1969.

District Five of the ICIE consists of seven southwestern states. They are Nebraska, Kansas, Oklahoma, Texas, New Mexico, Colorado and Nevada.

Retirements from service at the Los Alamos Scientific Laboratory numbered two in September. They were **Frank Dawson May,** D-8 senior photographer, and **Hugh E. Johnson,** SD-5 machinist II.

May and his wife, Hazel, who retired earlier this year, will make their home in Albuquerque. May was active in theater and drama groups in Los Alamos and is a past president of Toastmasters and, also, of the Los Alamos Heart Association. He was employed by D-8 in 1951.

Johnson retired after 10 years with the Shops department. He and his wife, Mary Rachel, will remain in Los Alamos.

Two Laboratory employees died in September. **Rexine (Mrs. Orba C.) Booth,** P-10 microscopist, died Sept. 25 at the Los Alamos Medical Center. She is survived by her husband who works in Group SP-4, and a daughter, Mrs. Susan Gittings, of Boulder, Colo. Funeral services were held at the United Church of Los Alamos and interment was in Guaje Pines Cemetery.

John Edward Sweeney, administrative assistant in Group W-1, died Sept. 21 in Los Alamos. He is survived by his wife, Marilyn, and two children—John E., Jr., and Mary Anita. Services were held at the Immaculate Heart of Mary Roman Catholic Church of Los Alamos. Interment was in the Santa Fe National Cemetery.

Julie (Mrs. Wright) Langham, H-DO, was presented with the Smith, Kline and French Communications Award for the best oral presentation of papers at the 39th Annual Meeting of the Biological Photographic Association, Inc., in Rochester, Minn.

The award consisted of a plaque and a check for $25. The title of Mrs. Langham's paper was "Photography of Biological Response to Highly Radioactive Particles."

The first of two Ski Sale and Exchange Nights, sponsored annually by the Los Alamos Ski Club, is scheduled for Nov. 17 from 7 to 9 p.m. at the Recreation Hall. The second date will be Dec. 4, same time and place.

For Reporting Change of Address

If your address has changed please inform THE ATOM by clipping and filling out this coupon. Print or type your name and both your old and new addresses.
Mail to: The Atom
Los Alamos Scientific Laboratory
Box 1663
Los Alamos, N.M. 87544

Previous Address

name

address

city state zip code

New Address

address

city state zip code

the technical side

Presentation at Summer Advanced Study Institute, Earth's Particles and Fields, University of California, Santa Barbara, Aug. 4-15:

"Anisotropic Distributions of Energetic Electrons in the Earth's Magnetotail and Magnetosheath" by S. Singer and S. J. Bame, both P-4 (invited)

"Magnetotail Plasma and Magnetospheric Substorms" by E. W. Hones, Jr., P-4 (invited))

"Shock Waves in the Solar Wind" by A. J. Hundhausen, T-12 (invited)

Presentation at Eighth International Union of Crystallography, General Assembly and International Congress, Stony Brook, N.Y., Aug. 12-22:

"'Intermetallic Structure File" by A. C. Larson and D. T. Cromer, both CMF-5

"Crystal Structure of Gamma Nitrogen" by R. L. Mills and A. F. Schuch, both CMF-9

Presentation at National Joint Statistical Meeting of the American Statistical Biometric Society and Institute of Mathematical Statistics, New York, Aug. 19-22:

"A New Approach in Experimental Designs which Tests Equality of Both the Population Means and the Variances" by R. K. Lohrding, C-5

Presentation at Meeting of a special section—"Application of Numerical Methods in Modern Gas Dynamics "—at Novosibirsk Academic Center, USSR, Aug. 18-29:

"New Techniques at Los Alamos for Numerical Fluid Dynamics" by C. W. Hirt, T-3

Presentation at 22nd IUPAC/12th International Conference on Coordination Chemistry, Sydney, Australia, Aug. 20-27:

"A Spectroscopic Study of the differences in Behavior of I(V)-and Te(IV)—Fluoride Ion Complexes in

LASL Participates in Milrow Calibration Test

More than 20 personnel from the Los Alamos Scientific Laboratory participated in the Milrow event, an underground nuclear calibration test on Amchitka Island in the Aleutians, Oct. 2.

The Laboratory was responsible for providing the nuclear device, its emplacement, backfilling and, with the help of EG&G, firing it, according to Bob Campbell, J-DO, test director in charge of LASL operations.

Campbell said procurement and modification of the device for the Milrow event was done by Groups W-1 and W-7. It was assembled at S site by GMX-3.

Most LASL employees participating in the test are members of J division. Arthur Cox, J-15 group leader, was in charge of an air mission during the test to photographically record water and ground motion. Kenneth Olson, also of J-15, headed a ground mission in which water-wave gauges were deployed around the island to measure any possible waves produced by the underground blast. Daniel Metzger, J-14, led a group responsible for taking alpha measurements (having to do with determining the performance of the nuclear explosive).

The calibration test employed a device of known explosive power—the equivalent of about one megaton of TNT—which was detonated 4,000 feet below the surface of the ground. Tests of similar yield had been safely conducted previously at the Atomic Energy Commission's Nevada Test Site.

The purpose of the calibration shot was to fire a device of known yield. Ground shock and seismic effects then are related to those documented in Nevada to calibrate the new test environment in terms of the old.

Following the Milrow event, the Atomic Energy Commission reported "it went just as we predicted."

A statement issued by the Commission said:

"We are gratified by the technical reports that are coming in on the Milrow event. The test registered 6.5 on the Richter scale, which is precisely what we forecast in our initial announcement of the test on Sept. 24.

"Also, as we had forecast, there were no damaging earthquakes. In fact, aftershock activity was even less than our conservative estimates. It was necessary for our technical people to turn up the 'gain' on their seismic detection instruments in order to be able to 'read' the aftershock activity.

"Temporary buildings at ground zero show external evidence of damage but are still standing. Careful examination of our extensive instrumentation indicates no radioactivity escaped either to the atmosphere or to the sea.

"No unusual water wave activity was reported at any tide stations. Preliminary observations made within 0.6 miles from ground zero have not indicated any apparent ecological effects. None of the sea otters which were in the experimental group penned nearest the shot—at a distance of 4,500 feet from ground zero—appeared to be injured."

Data from Milrow will be analyzed extensively and knowledge gained will be carefully studied before any decision is made regarding further testing on the island.

Milrow was the second underground nuclear test to be conducted on Amchitka. The first was Longshot in October of 1965.

Anhydrous HF and in Methylene Chloride" by L. B. Asprey and N. A. Matwiyoff, both CMF-4

Presentation at symposium on Bifurcation Theory, office of Naval Operations, Colorado State University, Fort Collins, Aug. 21-23:

"Some Problems of Secondary Bifurcation" by G. H. Pimbley, T-8 (invited)

Presentation at seminar at University of Maryland, College Park, Aug. 22:

"Work with Polarized Tritons at Los Alamos" by P. W. Keaton, Jr., P-DOR

Presentation at Eighth ANL-AUA Faculty-Student Conference, Argonne National Laboratory, Aug. 24-25:

"Radiation Effects from External Exposure to Humans" by W. H. Langham, H-4 (invited)

Presentation at Eighth International Symposium on Space Technology and Science, Tokyo, Japan, Aug. 25-30:

"The Uses of a Real Time Computer in Nuclear Rocket Engine Testing" by J. B. Henshall, J-17, NRDS

Presentation at the International Conference on Properties of Nuclear States, Montreal, Canada, Aug. 25-30:

"Spectroscopic Information from Few Particle Transfer Reactions" by O. Hansen, P-DOR

Presentation at Gordon Research Conference, Providence Heights College, Issaquah, Wash., Aug. 25-29:

"Holographic Cine Interferometry" by F. C. Jahoda, P-15

Presentation at Conference on the Science of Superconductivity, Stanford University, Stanford, Calif., Aug. 26-29:

"5f Electrons an Superconductivity: Dilute Alloys Formed Between Lanthanum and the Actinide Metals" by H. H. Hill, CMF-5, J. D. G. Lindsay, CMF-DO, R. W. White, CMF-DOT, L. B. Asprey, CMF-4, V. O. Struebing, CMF-5, and B. T. Matthias, University of California at San Diego

"Superconductivity in the 'Actinide' Elements" by H. H. Hill, CMF-5

Presentation at Seventh International Conference on High Energy Accelerators, Yerevan Institute of Physics, Yerevan, Armenia, USSR, Aug. 27-Sept. 2:

"Design and Construction Status of the Los Alamos Meson Physics Facility" by L. Rosen, MP-DO

"Linear Accelerator for Pions" by D. E. Nagle, MP-DO

Presentation at Third International Biophysics Congress of the International Union for Pure and Applied Biophysics, Cambridge, Mass., Aug. 29-Sept. 3:

"High-Speed Microfluorometric Studies on DNA Distributions in Cell Populations" by M. A. Van Dilla, T. T. Trujillo and P. F. Mullaney, all H-4

Presentation at Conference on Quantum Solids, Aspen Institute for Humanistic Studies, Aspen, Colo., Aug. 31-Sept. 6:

"Crystal Structure of Gamma Nitrogen" by R. L. Mills and A. F. Schuch, both CMF-9

Presentation at Lactose Operon Meeting, Symposium in Quantitative Biology, Cold Spring Harbor, N.Y., Sept. 1-5:

"Concerning Quantitative Interpretation of Induction Phenomena" by W. B. Goad, T-4 and J. R. Sadler, University of Colorado, Boulder (invited).

Presentation at 12th Annual Conference on Solid Mechanics of the Polish Academy of Science, Jaszowiec, Poland, Sept. 1-10:

"Elastic and Plastic Buckling of Cylindrical Shells Subjected to Impulsive Loads" by W. C. Lyons, W-8

Presentation at International Association of Geomagnetism and Aeronomy-General Scientific Assembly, Madrid, Spain, Sept. 1-12:

"Airborne Observations of the Night Airglow" by N. W. Glass, J. H. Wolcott, R. L. Wakefield, and R. W. Peterson, all J-16

"Solar Wind Properties and the State of the Magnetosphere" by A. J. Hundhausen, T-12 (invited)

Presentation at 1969 International Seminar, Heat and Mass Transfer, Herceg-Novi, Yugoslavia, Sept. 1-13:

"Generalized Turbulence Transport Equations" by C. W. Hirt, T-3 (invited)

Presentation at symposium on Nuclear Reaction Mechanisms and Polarization Phenomena at University Laval, Quebec, Canada, Sept. 1-2:

"The Los Alamos Meson Factory," by L. Rosen, MP-DO and P. W. Keaton, Jr., P-DOR

"Work With Polarized Tritons at Los Alamos" by P. W. Keaton, Jr., P-DOR

Presentation at seminars, Yale University, New Haven, Conn., Aug. 22, and Purdue University, Lafayette, Ind., Sept. 2:

"Level Structures of ODD-A Deformed Nuclei" by M. E. Bunker, P-2

Presentation at Conference on Magnetic Fields, University of Nevada, Reno, Sept. 2-3:

"Induced Polarity in Two-Dimensional Fields" by H. F. Vogel, MP-6

Presentation at American Physical Society Meeting, Honolulu, Hawaii, Sept. 2-5:

"Mössbauer Effect Measurements in ^{181}Ta" by R. D. Taylor, CMF-9 and E. K. Storms, CMB-3

"The ^{175}Lu(n, gamma) ^{176}Lu Reaction and the Energy Levels of ^{176}Lu" by E. B. Shera and E. T. Jurney, both P-2, M. M. Minor, University of Maryland, College Park, and R. K. Sheline, Florida State University, Tallahassee

"Diamagnetism of Helium and Gordon Scattering" by J. E. Brolley, P-DOR, and D. A. Liberman, T-4

"Dynamic Stabilization of Z-Pinches" by P. R. Forman, P-14

continued on next page

"An Equation of State for Shocked Polyurethane Foam" by C. L. Mader, T-5, and W. J. Carter, GMX-6

"Luminosity Fluctuations of 3C 273" by N. J. Terrell, Jr., P-DOR, and K. H. Olsen, J-15

"On the Motion of a Newly-Created Magnetoplasma" by J. Zinn, J-10

"Plasma Focus Development at Voltages Greater than 25 kV" by K. D. Ware, J. W. Mather, P. J. Bottoms, J. P. Carpenter and A. H. Williams, all P-7

"The Radius of a Lightning Return Stroke" by T. R. Connor, J-10

Presentation at Third Annual Numerical Plasma Simulation Conference, Stanford, Calif., Sept. 2-5:

"A Comparison of Transform and Particle-In-Cell Methods of Collisionless Plasma Simulation" by T. P. Armstrong and C. W. Nielson, both P-18

"Numerical Method for Studying Linear Stability of Highly Inhomogeneous Plasmas" by J. P. Friedberg, C. W. Nielson and R. L. Morse, all P-18

"Particle-In-Cell Simulation of Counter-Streaming Electron and Ion Beams" by R. L. Morse and C. W. Nielson, both P-18

"Simulation of Axisymmetric, High Beta Plasma" by D. O. Dickman, C-4, R. L. Morse, P-18, and L. E. Rudsinski, C-4

"The Simulation of Binary Collision Processes in Plasmas" by T. A. Oliphant and C. W. Nelson, both P-18

"A Variational Approach to the Numerical Analysis of Vlasov Plasmas" by H. R. Lewis, P-18

"Two-Dimensional, Two-Species PIC Simulations of Instability Between Two Ion Beams in the Presence of Warm Electrons" by C. R. Shonk, J-10 and R. L. Morse, P-18

Presentation at IAGA Commission IV Special Session on Instabilities in the Magnetosphere, Madrid, Spain, Sept. 2-12:

"Changes of the Plasma Sheet in the Magnetotail Associated with Magnetospheric Substorm" by E. W. Hones, Jr., P-4

Presentation at 158th National Meeting of the American Chemical Society, New York, Sept. 7-12:

"Infrared Measurement of Chain Branching Rates in Hydrogen-Oxygen Mixtures Ignited by Reflected Shock Waves" by R. W. Getzinger, L. S. Blair and D. B. Olson, all GMX-7

"Crystal Structure of $K_2VO_2F_3$—A Nonlinear Dioxovanadium (V) Group" by S. H. Mastin and R. R. Ryan, both CMF-4

"The Microscope. Refractive Index and Chemical Composition of Complexes" by R. A. Penneman, CMF-4

Presentation at International Conference on Mass Spectroscopy, Kyoto, Japan, Sept. 8-12:

"Mass Spectrometric Studies of Plutonium Compounds at High Temperatures. V. The Plutonium-Carbon System" by R. A. Kent, CMB-11

"Ionization Cross-Sections of the Elements" by J. B. Mann, CMF-4

Presentation at Conference on Numerical Solution of Elliptic Differential Equations, Rolla, Mo., Sept. 8-12:

"A Survey of Methods for the Direct Solution of the Discrete Poisson Equation on a Rectangle" by F. W. Dorr, C-6

Presentation at International Colloquium of the National Center for Scientific Research, Physical Properties of Solids Under Pressure, Grenoble, France, Sept. 8-10:

"New High Pressure Phase Transformations in Rare Earth and Actinide Carbide Systems" by M. C. Krupka and M. G. Bowman, both CMB-3

"Self-Consistent Field Calculations of Bulk Properties of Solids" by D. A. Liberman, T-4

Presentation at the Second Annual Technical Meeting of the International Metallographic Society, San Francisco, Calif., Sept. 8-10:

"A Note on the Metallographic Preparation of U-Pu-Zr Alloys" by J. H. Bender, CMB-11

"Alternating Current Electro-Polishing and Electro-Etching of Metals" by K. A. Johnson, CMB-11

"An Improved Grinder-Polisher for Hot Cell Use" by J. H. Bender and K. A. Johnson, both CMB-11 and D. B. Court, CMB-7

Presentation at Third International Conference on High Energy Physics and Nuclear Structure, Columbia University, New York, Sept. 8-12:

"The Los Alamos Meson Physics Facility" by R. L. Burman, MP-6 (invited)

Presentation at International Conference on Physics of Quiescent Plasmas, Paris, France, Sept. 8-13:

"A New Operating Hot Plate with Programmable Temperature Profiles" by F. E. Wittman, D. B. Henderson, and H. Dreicer, all P-13

"Measurement of the Resonant Charge Exchange Cross-Section in a Potassium Q-Machine Plasma Column" by H. Dreicer, D. B. Henderson, D. Mosher, F. E. Wittman, all P-13 and K. Wolfsberg, J-11

"A Second Generation Quiescent Plasma Source: The CH Q-Machine" by D. E. Michael, J. McLeod and H. Dreicer, all P-13

"The Theory of Velocity Distribution Associated with Bounded Quiescent Plasmas: A Problem in Spatial Relaxation" by D. Dreicer, P-13, J. D. Thomas, New Mexico State University, and W. B. Riesenfeld, P-18

"Effect of Plasma Access Holes in Microwave Resonators Used for Determination of Electron Density" by H. Dreicer, P-13 and W. F. Rich, T-5

"The Angular Distribution of Efflux from an Atomic Beam Nozzle" by D. B. Henderson, P-13

Presentation at Los Alamos League of Women Voters, Sept. 9:

"'Environmental Quality Control in Los Alamos" by H. F. Schulte, H-5, W. R. Kennedy, Jr., H-6, and L. A. Emelity, H-7

Presentation at 11th Annual Explosives Safety Seminar of the Armed Services Explosives Safety Board, Memphis, Tenn., Sept. 9-10:

"Internal Blast Loading of Scale-Model Explosive-Processing Bays" by C. A. Anderson, GMX-3

Presentation at NASA-AEC National Symposium on Developments in Irradiation Testing Technology, Lewis Research Center's Plum Brook Station, Sandusky, Ohio, Sept. 9-11:

"Use of Nuclear Explosions for the Study of Radiation Damage Processes' by R. L. Carter, W-8

"Development and Feasibility of Isothermal Irradiators" by C. V. Weaver, A. J. Patrick, and W. A. Ranken, all N-5

"Grooved Melt Wires for Temperature Measurement of Reactor Fuel" by P. G. Salgado, R. L. Rudman, both K-5 and B. J. Thamer, K-2

"Recent Advances in Fast-Response Miniature Neutron Flux Monitors" by D. B. Stillman, J-8

Presentation at ESLAB/ESRIN Symposium, "Intercorrelated Satellite Observations Related to Solar Events," Noordwijk, Holland, Sept. 16:

"Solar Wind Disturbances Associated with Solar Activity" by A. J. Hundhausen, T-2 (invited)

"Plasma Measurements Across the Bow Shock and in the Magnetosheath" by A. J. Hundhausen, T-12 (invited)

"An Observation of the February 26, 1969, Interplanetary Shock Wave" by A. J. Hundhausen, T-12 and S. J. Bame and M. D. Montgomery, both P-4

"Interaction of Solar Energetic Particles with the Earth's Bow Shock and Magnetopause" by S. Singer, P-4

Presentation at Japan Atomic Energy Research Institute, Tokai-mura, Japan, Sept. 17:

"Ceramic Plutonium Fuel Materials Research at LASL" by J. A. Leary and R. A. Kent, both CMB-11 (invited)

Presentation at the Third American Electromagnetic Isotope Separator Symposium, Brookhaven National Laboratory, Upton, Long Island, Sept. 16-17:

"Injection of Uranium Atoms into Biological Specimens" by B. J. Dropesky, G. M. Kelley, both J-11 and J. H. Manley, Dir. Off.

"Current Status of the On-Line Separator Project at Godiva IV" by L. Forman, J-16, S. J. Balestrini, N-2, and T. R. Jeter and H. J. Schuckler, both of the U.S. Army Ballistic Research Laboratories

Presentation at Conference on Surface Studies, Sandia Laboratories, Albuquerque, Sept. 17-19:

"Determination of Surface Oxygen and Carbon by Helium-3 Bombardment" by B. K. Barnes, W. M. Sanders, and D. M. Holm, all K-1

"LEED Studies of Surface Reactions" by W. P. Ellis, CMB-8

"The Effects of Surfaces on the Effusion Process" by J. W. Ward, CMF-5

Presentation at International Conference on Nuclear Fusion Reactors, Culham Laboratory, UKAEA, Berkshire, England, Sept. 17-19:

"Fuel Burnup and Direct Conversion of Energy in a D-T Plasma" by T. A. Oliphant, P-18

"On Nuclear Fusion Objectives" by J. L. Tuck, P-DO

"Feasibility Studies of Pulsed, High-B Fusion Reactors" by G. I. Bell, T-DOT, W. H. Borkenhagen, P-16 and F. L. Ribe, P-15

Presentation at the Fourth International Symposium on Identification of Substances by Paper and Thin-Layer Chromatography, Rome, Italy, Sept. 22-24:

"Application of Combined Pyrolysis-TLC to the Study of Chemical Kinetics" by R. N. Rogers and L. C. Smith, both GMX-2 (invited)

new hires

CMB division

James E. Rein, Idaho Falls, CMB-1 (rehire)
Antonio D. Guillen, Alcalde, CMB-11

CMF division

Charles E. Strouse, Apollo, Pa., CMF-4 (postdoctoral)

D division

Lore M. Watt, Los Alamos, D-2 (casual-rehire)
Carolyn K. Robinson, Osceola, Iowa, D-6 (part time)

GMX division

Larry J. Dalton, Monticello, Ill., GMX-1 (rehire)
Charles M. Montoya, Santa Fe, GMX-2
Catherine E. Markham, Los Alamos, GMX-7 (rehire)
Tamara J. Worthington, Los Alamos, GMX-7 (rehire)
James A. Naatz, Espanola, GMX-11

H division

Geraldine M. Cramer, Los Alamos, H-DO (casual)
Eldon M. Parrish, Las Vegas, Nev., H-1
Herman E. Roybal, Santa Fe, H-1
Robert H. Wood, Los Alamos, H-4
William D. Purtymun, Albuquerque, H-6

J division

Lois B. Dauelsberg, Los Alamos, J-10
John W. Kodis, Youngstown, Ohio, J-10
Alvin H. Davis, Buffalo, N.Y., J-15

MP division

James J. Amato, New York, MP-DO
Ennis L. Mills, Los Alamos, MP-5
James C. Caine, Columbus, Ohio, MP-6

N division

John T. Caldwell, Livermore, Calif., N-6

P division

Joseph P. Bradley, Linwood, Pa., P-1
Jose D. Sandoval, Grants, P-15
Eugene G. Sherwood, Los Alamos, P-16

Personnel department

Deanna M. Kirby, Los Alamos, PER-1 (rehire)
Glenna Newman, Los Alamos, PER-5 (casual-rehire)

Public Relations department

Jacqueline M. Meketa, Los Alamos, PUB-1 (part time)

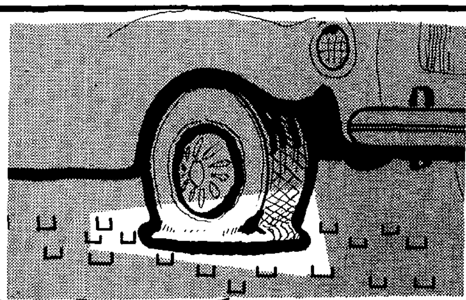
Shops department

Joseph E. P. Tafoya, Santa Fe, SD-1
Theodore M. Martinez, San Juan Pueblo, SP-4

T division

John S. Clarke, Glen Falls, N.Y., T-2

20 years ago in los alamos



Culled from the Nov., 1949 files of the Santa Fe New Mexican by Robert Porton

Staples Cause 200 Flat Tires

A flat tire epidemic is sweeping Los Alamos. Police said spilled staples on two roads leading out of residential districts have deflated "at least 200 tires" in the past two days, and tire shops have reported a booming business. The staples are doing damage on West Road and on the Golf Course Road near North Community. Several drivers have called in to report all tires on their vehicles flat, police stated. No clues yet as to the culprit.

Town Forum Plans Speaker Season

The Los Alamos Town Forum has planned a series of lectures for its 1949-50 season according to Forum President John Macy, Jr. The speakers will include AEC Chairman David Lilienthal, George Gamow, Stuart Chase, Vincent Shehan and Ogden Nash.

First Nuclear Series Report is Published

The first Los Alamos volume of the National Nuclear Energy series, "Ionization Chambers and Counters in Experimental Techniques," has been published and is available to local scientists. Authors are Bruno Rossi and Hans H. Staud, both of whom were formerly employed here. The initial Los Alamos volume describes the general physical principles underlying the operation of ionization chambers, counters and other radiation detection instruments.

Smyth Cites Goal for Laboratory

AEC Commissioner Henry D. Smyth has said the national laboratories created by the Commission are necessary because of the specialized work they must do. He pointed to Los Alamos as the project in the group that has the "clearest and most immediate objective." In a report received on the Hill this week, Smyth said, in referring to the weapons development program, "the people running Los Alamos have the simplest problem of any of the AEC's labs." He stated, that while most of the effort at Los Alamos is programmatic, there should also be some basic research.

what's doing

NEWCOMERS—Game night, used book sale and election of officers, Nov. 19, 7:30 p.m., Recreation Hall. For information call Mrs. Fran Talley, 662-4110.

PUBLIC SWIMMING—High School Pool—Mondays through Thursdays, 7:30 to 9 p.m;. Saturdays and Sundays, 1 to 6 p.m.; Adult Swim Club, Sundays, 7 to 9 p.m. (Will be closed during Thanksgiving vacation.)

CHORAL SOCIETY—Rehearsals now in progress each Tuesday, 7:30 p.m., Lodge. Winter concert, "Carmina Burana," Carl Orff; Spring concert, Bach's "St. Mathew's Passion." For further information call John Ward, 8-4554.

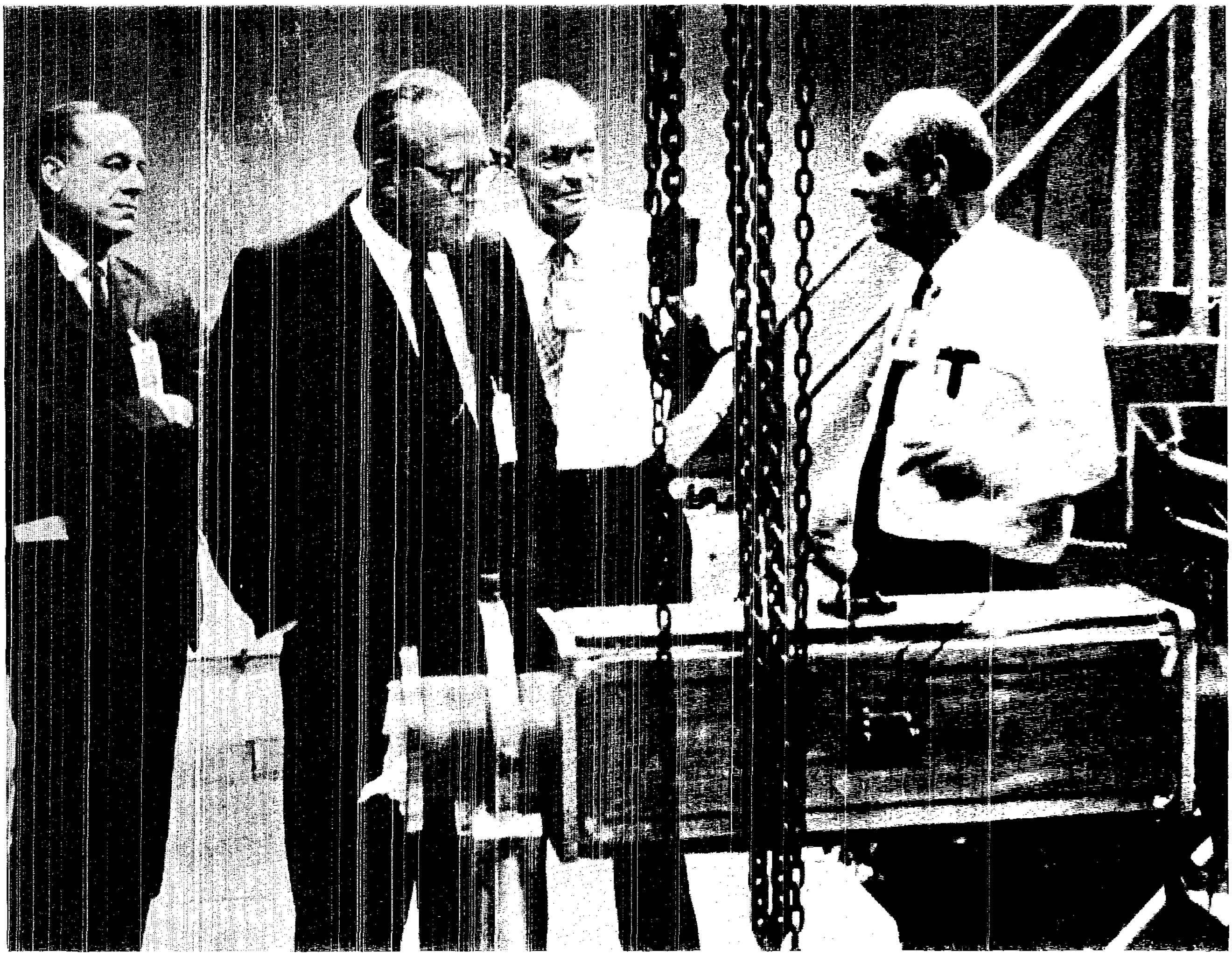
LOS ALAMOS CONCERT ASSOCIATION—Nov. 6, 8:15 p.m., Civic Auditorium, Houston Ballet; Nov. 21, 8:15 p.m., Civic Auditorium, Beaux Artes String Quartette. For information call Raphael La Bauve, 8-4382.

LOS ALAMOS ARTS COUNCIL—Nov. 23, 7:30 p.m., Bethlehem Evangelical Lutheran Church, "The Organ in Recital," new 14-rank organ in chamber music recital.
Nov. 30, 3 p.m., Lodge, Helen Rumpel opening of show on stitchery, painting, pottery, batik and weaving, accompanied by slide lecture.

MESA PUBLIC LIBRARY—Through Nov. 17—UNICEF display
- Nov. 6 through Nov. 26—National Book Week display
- Nov. 17 through Dec. 5—New Mexico Geological Society display

RIO GRANDE RIVER RUNNERS: Meetings scheduled for noon, second Tuesday of each month at South Mesa Cafeteria. For information call Cecil Carnes, 672-3593.

OUTDOOR ASSOCIATION—No charge, open to the public, contact leader for information about specific hikes.
- Nov. 2—Bandelier, Ken Ewing, 8-4488
- Nov. 9—Stone Lions, Jay Fries, 8-4537
- Nov. 16—Ancho Canyon, North Fork, Ken Ewing, 8-4488
- Nov. 22—Sandia Crest, Reed Elliot, 2-4515



Newly-appointed AEC Commissioner Clarence E. Larson, second from left, recently visited the Los Alamos Scientific Laboratory and toured various facilities such as PHERMEX where he was briefed by Duncan P. MacDougall, GMX division leader, second from right, and Doug Venable, *far right*, GMX-11 group leader, who described the operation of the pulsed high-energy x-ray machine. At left is John A. Griffin, special assistant to the commissioner.

BACK COVER:

It's not a kayak that Zia Company workmen are guiding into a third floor J-16 laboratory at the Administration building even though it looks somewhat like one. Rather, it's an antenna calibration device that will be used to investigate capabilities of antennas for detection of electromagnetic pulses associated with detonations of nuclear weapons. Windows had to be removed, and a crane was employed, to get the device into the laboratory. The apparatus was designed by Ralph Partridge, J-DOT from an idea of John Malik's, also of J-DOT. John Hayes, T-5, was responsible for the computer code that set up parameters for its geometry and Mariano Chavez, ENG-2, did the structural design work.

Henry T. Motz
3187 Woodland
Los Alamos, New Mexico 87544